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Application No. 10/619,987
Amendment dated March 3, 2008
Reply to Office Action of September 13, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A surgical ligation clip for ligating a vessel, comprising:
a continuous length of material, said material having an elongated member having a proximal end and an opposite distal end, and a length therebetween, said material having an elongated arm having a proximal end and an opposite distal end, and a length therebetween, said arm having a vessel contacting surface oriented toward said member, said member having a surface oriented toward said vessel contacting surface of said arm, said arm and said member being biased toward one another in an open position, said material having a connector having a maximum length, and a maximum height perpendicular to the maximum length of said connector, said connector connecting said member and said arm, said clip having a longitudinal axis, a proximal end, an opposite distal end, and a length therebetween, said clip having a width proximate said distal end of said clip that is greater than a width proximate said proximal end of said clip, said surface of said member along at least a portion of the length of said member having a width corresponding to the width proximate said distal end of said clip, wherein one of said arm and said member includes a portion at said distal end thereof generally oriented along the longitudinal axis of said clip, and the maximum length of said connector is oriented along the longitudinal axis of said clip, the maximum length of said connector approximating the maximum height of said connector.
2. (currently amended) The clip of claim 1, wherein said surface of at least one of said clamping arm and said support member is treated to enhance gripping of the fluid carrying structure vessel.

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3. (original) The clip of claim 2, wherein said surface includes at least one of ridges, notches, burrs, and etching.
4. (currently amended) The clip of claim 1, ~~further comprising wherein said connector includes a coil-to-bias biasing said clamping arm and said support member toward one another in the open position.~~
5. (currently amended) The clip of claim 1, wherein said continuous length of material of at least one of said support member and clamping arm has a non-circular cross section along at least a portion of its length.
6. (currently amended) The clip of claim 1, in combination with a clip applier for applying the said clip to a fluid carrying structure.
7. (currently amended) A surgical ligation clip for ligating a fluid carrying structure, said clip comprising:
 - a longitudinal axis, a distal end, and a proximal end opposite said distal end;
 - a clamping arm oriented generally along the longitudinal axis of said clip, said clamping arm including a portion at said distal end of said clip generally oriented along the longitudinal axis;
 - a support member oriented generally along the longitudinal axis of said clip, said support member including a portion at said distal end of said clip generally oriented along the longitudinal axis; and
 - a connector at said proximal end of said clip having a maximum length oriented along the longitudinal axis, and a maximum height perpendicular to the maximum length of said connector, the maximum length of said connector approximating the maximum height of said connector, said connector joining said support member and said clamping arm, said clip being formed of a continuous length of material having a first free end terminating at said connector and a second free end terminating proximate said distal end of said clip.
8. (original) The clip of claim 7, wherein said connector is adapted to bias said support member and said clamping arm toward one another in a closed position.

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9. (original) The clip of claim 7, wherein said connector includes a coil.
10. (original) The clip of claim 7, wherein a surface of at least one of said clamping arm and said support member is treated to enhance gripping of the fluid carrying structure.
11. (original) The clip of claim 10, wherein said surface includes at least one of ridges, notches, burrs, and etching.
12. (original) The clip of claim 7, wherein said continuous length of material of at least one of said support member and clamping arm has a non-circular cross section along at least a portion of its length.
13. (currently amended) The clip of claim 7, in combination with a clip applier for applying the said clip to a fluid carrying structure.
14. (currently amended) A surgical ligation clip for ligating a fluid carrying structure, comprising:

a longitudinal axis and a continuous length of material forming a support member and, a clamping arm, and a connector connecting said support member and said clamping arm, said clamping arm and said support member being biased toward one another to ligate the fluid carrying structure therebetween, at least one of said support member and said clamping arm having a length opposite said connector generally oriented along the longitudinal axis, and at least one of said support member and said clamping arm being convex relative to the other of said support member and said clamping arm along a plane perpendicular to the axis of rotation between said support member and said clamping arm when the said clip is in a closed position around the fluid carrying structure, said connector having a maximum length oriented along the longitudinal axis, and a maximum height perpendicular to the maximum length of said connector, the maximum length of said connector approximating the maximum height of said connector.
15. (currently amended) The clip of claim 14, wherein said clamping arm is convex relative to said support member when the said clip is in a closed position around

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the fluid carrying structure.

16. (original) The clip of claim 15, wherein said clamping arm has a radius of curvature of approximately 25 mm.
17. (original) The clip of claim 14, further comprising a coil to bias said clamping arm and said support member toward one another.
18. (original) The clip of claim 14, wherein a surface of at least one of said clamping arm and said support member is treated to enhance gripping of the fluid carrying structure.
19. (original) The clip of claim 18, wherein said surface includes at least one of ridges, notches, burrs, and etching.
20. (original) The clip of claim 14, wherein said continuous length of material of at least one of said support member and clamping arm has a non-circular cross section along at least a portion of its length.
21. (currently amended) The clip of claim 14, in combination with a clip applier for applying the said clip to a fluid carrying structure.
22. (currently amended) A surgical ligation clip for ligating a fluid carrying structure, comprising:
 - a longitudinal axis:
 - a support member having a proximal end, a distal end and a horizontal plane;
 - a clamping arm having a proximal end and a distal end, said distal end of said clamping arm being moveable above and below the horizontal plane of said support member; and
 - a connector ~~for~~ having a maximum length oriented along the longitudinal axis, and a maximum height perpendicular to the maximum length of said connector, the maximum length of said connector approximating the maximum height of said connector, said connector connecting said proximal end of said clamping arm to said proximal end of said support member, said connector being adapted to bias said distal end of said clamping arm away from said distal end of

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said support member while the said clip is in a closed and unengaged position so that said distal ends of said support member and said clamping member do not touch one another.

23. (original) The clip of claim 22, wherein a surface of at least one of said clamping arm and said support member is treated to enhance gripping of the fluid carrying structure.
24. (original) The clip of claim 23, wherein said surface includes at least one of ridges, notches, burrs, and etching.
25. (original) The clip of claim 22, wherein said connector includes a coil.
26. (original) The clip of claim 22, wherein at least one of said support member and clamping arm has a non-circular cross section along at least a portion of its length.
27. (original) The clip of claim 22, in combination with a clip applicator adapted to move said clamping arm above the horizontal plane of said support member to place said clip in an open position to receive the fluid carrying structure.
28. (currently amended) A surgical ligation clip for ligating a fluid carrying structure, comprising:
 - a longitudinal axis;
 - a clamping arm having a proximal end and a distal end;
 - a support member moveable relative to said clamping arm, said support member having a proximal end and a distal end, said support member including a first portion and a second portion defining a channel therebetween, said support member adapted to receive said distal end of said support member having a concave curvature oriented towards said clamping arm and being adapted to receive said clamping arm through said channel when the said clip is in a closed position; and
 - a connector for having a maximum length oriented along the longitudinal axis, and a maximum height perpendicular to the maximum length of said connector, the maximum length of said connector approximating the maximum

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height of said connector, said connector connecting said proximal end of said clamping arm to said proximal end of said support member, said connector being adapted to bias said clamping arm towards said support member in the closed position.

29. (original) The clip of claim 28, wherein said connector includes a coil.
30. (original) The clip of claim 28, wherein said clamping arm is curved along a plane perpendicular to the axis of rotation between said support member and said clamping arm.
31. (original) The clip of claim 28, wherein said clamping arm is convex relative to said support member along a plane perpendicular to the axis of rotation between said support member and said clamping arm.
32. (original) The clip of claim 28, wherein a surface of at least one of said clamping arm and said support member is treated to enhance gripping of the fluid carrying structure.
33. (original) The clip of claim 32, wherein said surface includes at least one of ridges, notches, burrs, and etching.
34. (original) The clip of claim 28, wherein at least one of said support member and clamping arm has a non-circular cross section along at least a portion of its length.
35. (currently amended) The clip of claim 28, in combination with a clip applicator for applying the said clip to a fluid carrying structure.

Claims 36-38 (cancelled).

39. (currently amended) A surgical ligation clip for ligating a fluid carrying structure, said clip comprising:
 - a longitudinal axis, a distal end, and a proximal end opposite said distal end;
 - a support member having a maximum length oriented generally along the longitudinal axis of said clip;

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a clamping arm having a maximum length oriented generally along the longitudinal axis of said clip, said clamping arm being biased toward said support member; and

a connector having a maximum length oriented along the longitudinal axis, and a maximum height perpendicular to the maximum length of said connector, the maximum length of said connector approximating the maximum height of said connector, and being less than half of the maximum lengths of one of said support member and said clamping arm, said clip being formed of a continuous length of material having a first free end terminating proximate said proximal end of said clip and a second free end terminating proximate said distal end of said clip.

40. (original) The clip of claim 39, wherein said clip includes a first bend section between said support member and said clamping arm.
41. (original) The clip of claim 41, wherein said support member includes a second bend section.
42. (new) The clip of claim 1, wherein the other of said arm and said member includes a portion at said distal end thereof generally oriented along the longitudinal axis.
43. (new) The clip of claim 1, wherein the length of said connector is less than half of the lengths said arm and said member.
44. (new) The clip of claim 1, wherein said connector biases said distal end of said arm away from said distal end of said member while said clip is in a closed and unengaged position.
45. (new) A surgical ligation clip for ligating a fluid carrying structure, comprising:
a longitudinal axis, a distal end, and a proximal end opposite said distal end;
a clamping arm having a proximal end, a distal end opposite said proximal end, and a length therebetween, a portion of the length of said clamping arm at said distal end being generally parallel to the longitudinal axis;

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a support member having a proximal end, a distal end opposite said proximal end, and a length therebetween, a portion of the length of said support member at said distal end being generally parallel to the longitudinal axis; and

a connector at said proximal end of said clip for connecting said clamping arm and said support member, said connector having a maximum length oriented along the longitudinal axis, and a maximum height perpendicular to the maximum length of said connector, the maximum length of said connector approximating the maximum height of said connector, and being less than half of the lengths of one of said clamping arm and said support member, said connector spacing said clamping arm and said support member apart from one another along a majority of the lengths thereof, and allowing for movement of said clamping arm and said support member relative to one another.

46. (new) A surgical ligation clip for ligating a fluid carrying structure, comprising:

a longitudinal axis, a distal end, and a proximal end opposite said distal end;

a clamping arm having a proximal end, a distal end opposite said proximal end, and a length therebetween, a portion of the length of said clamping arm at said distal end being generally parallel to the longitudinal axis;

a support member having a proximal end, a distal end opposite said proximal end, and a length therebetween, a portion of the length of said support member at said distal end being generally parallel to the longitudinal axis; and

a connector at said proximal end of said clip for connecting said clamping arm and said support member, said connector having a maximum length oriented along the longitudinal axis, and a maximum height perpendicular to the maximum length of said connector, the maximum length of said connector approximating the maximum height of said connector, said clamping arm and said support member spaced apart from one another along a majority of the lengths thereof, said connector allowing for movement of said clamping arm and said support member relative to one another.